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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,103	03/14/2001	Kazuhiro Tomita	108075-00048	2132

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EXAMINER

SHINGLETON, MICHAEL B

ART UNIT PAPER NUMBER

2817

DATE MAILED: 09/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09-805,103

Applicant(s)

Tomita

Examiner

SHINGLETON

Group Art Unit

2817

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE Three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

## Status

- ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-8 are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☒ Claim(s) 6 and 8 are allowed.
- ☒ Claim(s) 1, 2 and 7 are rejected.
- ☒ Claim(s) 3-5 are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
- ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).
- \*Certified copies not received: \_\_\_\_\_.

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of References Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

Office Action Summary

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*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Quinn Re. 31,545 (Quinn).

Figure 4 of Quinn clearly discloses a differential amplifier that receives first and second input signals (The signals directly applied to the bases of elements 100 and 102.) and generates first and second output signals (Ultimately at terminals 94 and 96.), the differential amplifier having a first differential converter including a first grounded emitter amplifier (102) that receives the first input signal and generates a first differential output signal, and a first grounded base amplifier (78) that receives the first input signal and generates a second differential output signal; and a second differential converter including a second grounded emitter amplifier (100) that receives the second input signal and generates a third differential output signal, and a second grounded base amplifier (80) that receives the second input signal and generates a fourth differential output signal; wherein the first output signal is generated by coupling the first differential output signal and the fourth differential output signal, and the second output signal is generated by coupling the second differential output signal and the third differential output signal. Note that in accordance with small signal analysis the grounded base amplifiers of Quinn are AC grounded just like the present invention ac grounds because of the capacitors like C2. (Note that the above description was done with Figure 4 of Quinn in mind, but applicant should also note that a similar description could be made with Figure 3A of Quinn.)

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior art as discussed in the specification as a "Gilbert-cell mixer" and whose general structure is shown in Figure 8 of the instant application (Note the middle paragraph on page 15 of the specification) referred to hereinafter as "AAPA" in view of Quinn Re. 31,545 (Quinn).

AAPA discloses the basic Gilbert-cell mixer. As applicant recognizes this mixer has a differential input wherein the accuracy of the mixer is in part dependent upon the "quality" of this first differential amplifier "20". This Gilbert-cell mixer of AAPA has all the features claimed except for the specifics on the differential amplifier that makes up the front end of the mixer (See the middle paragraph of page 15 of the instant specification.).

Figure 4 of Quinn clearly discloses a differential amplifier that receives first and second input signals (The signals directly applied to the bases of elements 100 and 102.) and generates first and second output signals (Ultimately at terminals 94 and 96.), the differential amplifier having a first differential converter including a first grounded emitter amplifier (102) that receives the first input signal and generates a first differential output signal, and a first grounded base amplifier (78) that receives the first input signal and generates a second differential output signal; and a second differential converter including a second grounded emitter amplifier (100) that receives the second input signal and generates a third differential output signal, and a second grounded base amplifier (80) that receives the second input signal and generates a fourth differential output signal; wherein the first output signal is generated by coupling the first differential output signal and the fourth differential output signal, and the second output signal is generated by coupling the second differential output signal and the third differential output signal. Note that in accordance with small signal analysis the grounded base amplifiers of Quinn are AC grounded just like the present invention ac grounds because of the capacitors like C2. (Note that the above description was done with Figure 4 of Quinn in mind, but applicant should also note that a similar description could be made with Figure 3A of Quinn.) Quinn recognizes that the above differential arrangement results in a "high-precision amplifier" (See the abstract.). The amplifier of Quinn is clearly an art recognized equivalent differential amplifier to the front-end amplifier of a Gilbert-cell mixer and has the added advantage of being high-precision.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the conventional differential amplifier of Quinn for the conventional differential amplifier that makes up the front end amplifier in AAPA because, as the reference is silent on the exact conventional differential amplifier used for the front end amplifier, any art-recognized conventional differential amplifier would have been usable such as the well-known conventional

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differential amplifier of Quinn, furthermore because this would only result in the use of the differential amplifier of Quinn for its well known and intended purpose of providing the differential amplifier function in circuits that call for such a function, still furthermore because the motivation of "high-precision" provides ample motivation to combine as this results in an overall circuit that is more high precision as taught Quinn.

*Allowable Subject Matter*

Claims 3-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 6 and 8 are allowed.

The prior art fails to teach or suggest the detailed transistor structure claimed in claims 3-6 and 8.

*Conclusion*

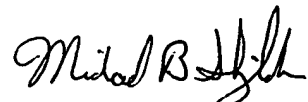
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Katsuharu and Smith disclose state of the art amplifier circuits.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is 703-308-4903. The examiner can normally be reached on Mon-Thurs from 8:30 to 4:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (703) 308-4909. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

MBS  
September 5, 2002

  
MICHAEL B. SHINGLETON  
PRIMARY EXAMINER  
GROUP ART UNIT 2817